



DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS DIRECTORATE
WASHINGTON, D.C. 20590

8562

[49 CFR Parts 172, 173, 174, 175, 176, 177]

[Docket No. HM-160; Notice No. 78-3]

TRANSPORTATION OF ASBESTOS

AGENCY: Materials Transportation Bureau, DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The amendments proposed herein would require certain kinds of asbestos to be shipped by all modes in non-specification, rigid, airtight packagings, such as metal or fiber drums; or in bags when shipped in closed freight containers. The proposals are intended to reduce the risks to property and to the public health and safety associated with the generation of airborne concentrations of asbestos that may result from the packaging and handling of asbestos fiber shipments. The available data clearly indicates that regular, long term exposure to airborne concentrations of asbestos fibers poses a range of carcinogenic and other serious health risks; and recent studies suggest that these dangers are also associated with exposures that are low-level, brief or intermittent.

DATE: Comments must be received on or before May 2, 1978.

ADDRESS COMMENTS TO: Dockets Section, Office of Hazardous Materials Operations, Department of Transportation, Washington, D.C. 20590. It is requested that five copies be submitted.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

I. BACKGROUND—PRODUCTION/CONSUMPTION/TRANSPORTATION PATTERNS

Asbestos is a generic term used to describe a number of naturally occurring fibrous, hydrated mineral silicates. It includes chrysolite, crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos. These are all asbestiform minerals which, when crushed, produce asbestos fibers with various chemical and physical properties.

Asbestos fibers are generally characterized by high tensile strength and flexibility, and favorable chemical resistance, heat and frictional proper-

ties. Certain grades of asbestos can be spun and woven, while others can be laid and pressed to form paper, or used for structural reinforcement of materials such as cement, plastic, asphalt and tile. The asbestos content of these latter products ranges from 5 to 15 percent by weight.

Although asbestos is adaptable to more than 2,000 uses, the construction industry accounts for nearly two-thirds of the United States (U.S.) asbestos fiber consumption. The remaining 33 percent is utilized in a myriad of industrial and consumer products.

During the ten-year period ending 1976, the total amount of new asbestos introduced into the U.S. transportation system averaged approximately 1,700,000 short tons annually. Slightly more than half this tonnage consists of crude or milled asbestos fibers, with the remainder consisting of asbestos contained in products manufactured in whole or in part from asbestos. There is, of course, a lag between the time a shipment of asbestos fibers enters the transportation system and the time that shipment enters the transportation system as a manufactured product.

Growth in the utilization and transportation of asbestos is expected to slowly increase at a rate of about 2 percent per year.

During the entire history of the asbestos industry in the United States, domestic sources have been able to meet only a small percentage of U.S. requirements. Roughly 90 percent of the total U.S. industrial demand for all grades and types of asbestos fibers is thus dependent on foreign imports—with Canada being the major source of supply. In 1975, 93 percent of U.S. imports came from Canada with the next largest suppliers being the Republic of South Africa (3 percent) and the U.S.S.R. (2 percent). Eight other countries shipped smaller amounts of asbestos to the U.S. in 1975.

The transportation pattern for asbestos is characterized by three distinct stages:

In the first stage, asbestos ore is transported from the mine site to a milling plant where the ore is crushed and processed into fibers.

Of the five mills operating in the U.S. as of late 1976, three are located at the mines, but the other two are 32 and 52 miles distant. Transportation is reported to be by open-hopper vehicles such as dump trucks.

The second stage is characterized by the shipment of crude or milled asbes-

tos fibers from the mills (mostly foreign) to industries that use asbestos in the products they manufacture. The largest industry in this category (SIC 3292) as of 1972 consisted of 142 establishments primarily engaged in the manufacture of asbestos textiles, asbestos building materials, asbestos insulating materials for covering boilers and pipes, and other products composed wholly or chiefly of asbestos fibers. Other industries receiving asbestos fibers are mainly industries engaged in the production of asphalt felts and coatings (SIC 2052), hard surface floor coverings (SIC 3996), gas-kets (SIC 3293), and paper products (SIC 2261).

These industries generally receive their shipments of asbestos fibers in pressure packed, five-ply paper or woven vinyl bags weighing about 100 lbs. per bag, with the bags glue-locked to each other and shrink-wrapped to a pallet (wrapped with a film of plastic which is then shrunk). In the aggregate, rail shipments handle about 80 percent of all milled asbestos fibers entering the U.S. transportation system, with merchant vessel shipments accounting for the remaining 20 percent. Packaging for ocean transportation, both for imported and exported asbestos fibers, is changing to containerization. All shipments, for example, from the Union of South Africa have been reported to be containerized. Although rail shipments of asbestos fibers are not yet being containerized, the majority of such shipments are made in sealed, railroad box cars which are routed for the most part direct to the asbestos products manufacturing industries.

The third stage in the transportation of asbestos involves the shipment of manufactured products made wholly or in part from asbestos. Approximately 61 percent of the asbestos used in manufactured products is firmly imbedded or "locked in" such products as floor tiles, asbestos cement pipes and sheets, floor products and plastics. These products generate less airborne fibers than asbestos manufactured products that are friable or in powder form, although at the present time, it is not known whether the transportation of products in either category under current conditions presents an unreasonable risk to the public health and safety. As defined in the Department of Commerce's 1972 Census of Transportation, approximately 92 percent of asbestos manufactured products are shipped by motor vehicle, with rail and all other modes accounting for about 7 percent and 1 percent, respectively.

II. GENERAL EFFECTS OF AIRBORNE ASBESTOS EXPOSURE/EVIDENCE OF ACCIDENTAL RELEASE OF ASBESTOS FIBERS

The MTB believes it to be firmly established that asbestos, in its several commercial forms, poses serious health hazards to individuals subject

to long term exposure to airborne asbestos concentrations. As noted in the 1972 preamble of the Occupational Safety and Health Administration (OSHA) standard on asbestos (37 FR 11318): "No one has disputed that exposure to asbestos of high enough duration is causally related to asbestosis and cancers * * *." Recent new evidence, however, as reported by OSHA, not only tends to confirm this finding but also suggests that serious potential health risks are involved with even relatively low-level, brief or intermittent exposure to airborne asbestos concentrations. Although there is no detailed information available on the amount of asbestos fibers released in transportation, the MTB believes that, in consideration of the carcinogenic and other health hazards associated with asbestos, there is a sufficient basis for establishing regulatory control of asbestos in transportation.

III. RELATIONSHIP TO HM-145

On December 9, 1976, the MTB published an Advanced Notice of Proposed Rulemaking (41 FR 53824) in Docket No. HM-145 entitled "Environmental and Health Effects Materials." In that Notice, the MTB announced that it was considering whether new or additional transportation controls are necessary for certain classes of materials which are not generally subject to the existing Hazardous Materials Regulations.

A large number of comments were received in Docket HM-145. The MTB has concluded that a considerable amount of time and effort is still needed in staff evaluation of these comments before it will be in a position to issue a notice or notices of proposed rulemaking for environmental and health effects materials, either on a comprehensive or on a selective basis.

Several comments on HM-145, however, were specifically directed to the idea that transportation regulatory controls for asbestos be established as soon as possible, with the suggestion that asbestos be addressed on an individual basis, rather than waiting until the eventual resolution of Docket HM-145. The MTB agrees with the urgency of the views expressed on this matter, and therefore asbestos is being treated separately under this proposed rulemaking.

IV. QUANTITATIVE VERSUS QUALITATIVE STANDARDS

In determining that there is a need for transportation controls on asbestos, the MTB has considered the desirability and practicality of utilizing quantitative or qualitative emission criteria or some combination of the two, either as developed by the MTB or as developed by other agencies.

Currently, quantitative permissible exposure limits for asbestos, as promulgated by the Environmental Protection Agency (EPA) have not been established for environmental or non-

occupational settings. The EPA's standard for airborne asbestos emissions falls under its "no visible emission" criterion. This is in contrast to the quantitative criteria established by OSHA for airborne concentrations of asbestos fibers in occupational or worksite conditions. The criteria of OSHA consist of an 8-hour time weighted average standard, and a maximum "ceiling concentration" standard. Both standards are to some extent based on the ability of current devices to measure asbestos airborne concentrations in a systematic, meaningful manner, and are not directly based on any causal or threshold relationship between the standards and the probability of contracting an asbestos induced disease.

The MTB believes that its proposed non-specification packaging standards as applied to the transportation of asbestos fiber is an effective and efficient means of precluding potential problems associated with asbestos airborne emissions occurring during transportation, and that they are consistent with the standards of both EPA and OSHA.

V. SCOPE AND IMPACT

The standards as herein proposed would only apply to the transportation of what are generally regarded as milled or crude asbestos fibers, would exclude asbestos contained in natural or artificial binding material and manufactured products containing asbestos.

In light of the regulatory controls already in existence or under consideration by other federal agencies, and until such time as the MTB has more specific and concrete information that the normal packaging and handling of these forms of asbestos is such as to create unreasonable asbestos exposure problems, the MTB does not believe their specific regulation in transportation is warranted.

In reviewing the potential inflationary and economic impacts associated with the proposed rule, the MTB has determined that such impacts will be minimal. Based on the foregoing discussion of the production and transportation pattern for asbestos shipments, it is clear that the only aspect of that pattern which might experience a cost impact pertains to import and export shipments by merchant vessel. This follows from the fact that the proposed rule would generally require all such shipments to be containerized in contrast to packaging alternatives now available to shippers. However, the cost differential between these alternative cargo handling methods is not only very small, but a significant portion of such shipments already containerized, or being containerized.

As proposed herein, a new paper shipping name "Asbestos" would be added to the list of hazardous materials in 49 CFR 172.101. The proposed

classification for "asbestos" would be as an ORM-C (Other Regulated Material, Group C).

Primary drafters of this document are A. W. Grella, Technology Division, Office of Hazardous Materials Operations; J. S. Nalevanko, Economist, Materials Transportation Bureau; and Douglas A. Crockett, Office of the Chief Council, Research and Special Programs Directorate.

In consideration of the foregoing, Title 49, Code of Federal Regulations, Parts 172 through 177 would be amended as follows:

PART 172--HAZARDOUS MATERIALS TABLE AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

§ 172.101 [Amended]

1. In § 172.101, the Hazardous Materials Table would be amended by adding a new entry, immediately following "Arsine," to read as follows:

(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label (a) required (if not excepted)	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipments		
			(a) Exceptions	(b) Specific requirements	(a) Passenger carrying aircraft or rail car	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
(Add) Asbestos	ORM-C	None	173.1030(b)	173.1030(c)	No Limit	No Limit	1, 2	1, 2	Stow and handle to avoid airborne particles.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

2. § 173.1090 would be added to read as follows:

§ 173.1090 Asbestos.

(a) Asbestos includes any of the following hydrated mineral silicates: chrysolite, crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos, and every product containing any of these minerals.

(b) Asbestos which is immersed or fixed in a natural or artificial binder material (such as cement, plastic, asphalt, resins or mineral ore) and manufactured products containing asbestos are not subject to the requirements of this subchapter.

(c) Asbestos must be offered for transportation and transported in—

(1) Rigid, airtight packagings such as metal or fiber drums, or

(2) Bags when in closed freight containers, motor vehicles, or rail cars, that are loaded by the consignor and unloaded by the consignee.

PART 174—CARRIAGE BY RAIL

3. Subpart Heading **M** would be added immediately following § 174.812 to read as follows:

Subpart M—Detailed Requirements for Other Regulated Materials

4. § 174.840 would be added to read as follows:

§ 174.840 Special loading and handling requirements for asbestos.

Asbestos must be loaded, handled, and any asbestos contamination of rail cars removed, in a manner that will prevent occupational exposure to airborne asbestos particles. (See § 173.1090 of this subchapter.)

PART 175—CARRIAGE BY AIRCRAFT

5. § 175.640 would be added to read as follows:

§ 175.640 Special requirements for other regulated materials.

Asbestos must be loaded, handled, and any asbestos contamination of aircraft removed, in a manner that will prevent occupational exposure to airborne asbestos particles. (See § 173.1090 of this subchapter.)

PART 176—CARRIAGE BY VESSEL

6. § 176.906 would be added to read as follows:

§ 176.906 Stowage and handling of asbestos.

Asbestos must be stowed, handled and any asbestos contamination of vessels removed, in a manner that will prevent occupational exposure to airborne asbestos particles. (See § 173.1090 of this subchapter.)

7. § 177.844 would be added to read as follows:

§ 177.844 Other regulated materials.

Asbestos must be loaded, handled, and any asbestos contamination of transport vehicles removed, in a manner that will prevent occupational exposure to airborne asbestos particles. (See § 173.1090 of this subchapter.)

AUTHORITY: (18 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e) and paragraph (a)(4) of Appendix A to Part 102).

NOTE.—The Materials Transportation Bureau has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821 and OMB Circular A-107.

Issued in Washington, D.C., on February 23, 1978.

ALAN I. ROBERTS,
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Materials Operations.*

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